

ABBREVIATIONS	
&	= AND
@	= AT
Ø	= DIAMETER OR ROUND
B-#	= BOILER
BC	= BLOWER COIL UNIT
BLDG	= BUILDING
CD	= CONDENSATE DRAIN
CLG	= CEILING
COL	= COLUMN
CONSTR	= CONSTRUCTION
CONT	= CONTINUOUS
CORR	= CORRIDOR
CTR	= CENTER
CW	= COLD WATER
DCW	= DOMESTIC COLD WATER
DET	= DETAIL
DHW	= DOMESTIC HOT WATER
DHWR	= DOMESTIC HOT WATER RETURN
DIA	= DIAMETER
DIM	= DIMENSION
DN	= DOWN
DOAS	= DEDICATED OUTDOOR AIR UNIT
DWG	= DRAWING
EAR	= EXHAUST AIR REGISTER
EF	= EXHAUST FAN
(E)EXIST	= EXISTING
FAI	= FRESH AIR INTAKE
FC	= FLEXIBLE CONNECTION
FCU	= FAN COIL UNIT
FD	= FIRE DAMPER
GA	= GAUGE
GALV	= GALVANIZED
GPM	= GALLONS PER MINUTE
HVAC	= HEAT/VENT/AIR COND
HW	= HOT WATER
HWH	= HOT WATER HEATER
HWR	= HOT WATER RETURN PIPING
HWS	= HOT WATER SUPPLY PIPING
ID	= INSIDE DIAMETER (DIM)
IN	= INCH
INSUL	= INSULATION
MAX	= MAXIMUM
MECH	= MECHANICAL
MFR	= MANUFACTURER
MIN	= MINIMUM
N.A.	= NOT APPLICABLE
NTS	= NOT TO SCALE
OA	= OUTSIDE AIR
OC	= ON CENTER
OD	= OUTSIDE DIAMETER
R	= RISER
RA	= RETURN AIR
RAD	= RADIUS
RM	= ROOM
RTU	= ROOF TOP HV/HVAC UNIT
SA	= SUPPLY AIR
SAD	= SUPPLY AIR DIFFUSER
SD	= SMOKE DETECTOR
SECT	= SECTION
SPEC	= SPECIFICATION
STD	= STANDARD
TG	= TRANSFER AIR GRILLE
TYP	= TYPICAL
VD	= VOLUME DAMPER
VG	= GAS VENT LINE
VFD	= VARIABLE FREQUENCY DRIVE
VIF	= VERIFY IN FIELD
W	= WITH
W/O	= WITHOUT
WT	= WEIGHT

SYMBOLS		NOT TO SCALE
	=	SUPPLY AIR CEILING DIFFUSER (SAD) WITH NECK SIZE AND CFM INDICATED ON PLANS
	=	RETURN AIR REGISTER (RAR) WITH NECK SIZE AND CFM INDICATED ON PLANS
	=	EXHAUST AIR REGISTER (EAR); GRAVITY RELIEF GRILLE (GRG) WITH NECK SIZE AND CFM INDICATED ON PLANS
	=	SUPPLY AIR WALL REGISTER/GRILLE (SAR) WITH NECK SIZE AND CFM INDICATED ON PLANS
	=	RETURN AIR WALL REGISTER (RAR) WITH NECK SIZE AND CFM INDICATED ON PLAN
	=	POINT OF CONNECTION OF NEW PIPING/DUCTWORK TO EXISTING
	=	POINT OF DISCONNECTION OF NEW PIPING/DUCTWORK TO EXISTING
	=	INDICATES HARD DUCT WITH INTERNAL LINING (DIMENSIONS ARE INSIDE CLEAR WIDTH & DEPTH)
	=	INDICATES HARD DUCT (DIMENSIONS ARE INSIDE CLEAR WIDTH & DEPTH)
	=	INDICATES FLEXIBLE DUCT (DIMENSIONS ARE INSIDE CLEAR DIAMETER; LENGTH NOT TO EXCEED FOUR (4) FEET)
	=	DUCT TURN UP (SUPPLY, RETURN, EXHAUST)
	=	DUCT TURN DOWN (SUPPLY, RETURN, EXHAUST)
	=	DUCT SMOKE DETECTOR WITH ACCESS DOOR
	=	FIRE DAMPER WITH ACCESS DOOR
	=	VOLUME DAMPER
	=	INDICATES NEW WALL MOUNTED THERMOSTAT.
	=	TWO-WAY CONTROL VALVE
	=	BALL VALVE
	=	3-WAY CONTROL VALVE
	=	UNION
	=	INDICATES EXISTING TO BE REMOVED
	=	6" HIGH CONCRETE HOUSEKEEPING PAD (TYP. FOR ALL FLOOR MOUNTED EQUIPMENT)
	=	GAS PIPING
	=	REFRIGERANT PIPING
	=	MATCH LINE
	=	PHASE SEPARATION LINE
	=	HOT WATER SUPPLY
	=	HOT WATER RETURN
	=	CHILLED WATER SUPPLY
	=	CHILLED WATER RETURN
	=	CONDENSATE DRAIN
	=	PIPE TURN UP
	=	PIPE TURN DOWN
	=	PROJECT NORTH
	=	ROOM NAME
	=	ROOM NUMBER
	=	REVISION
	=	ELEVATION
	=	SECTION/DETAIL
	=	UNDERCUT DOOR (1/2 INCH)

H.V.A.C. GENERAL NOTES

- PROCURE AND PAY ALL NECESSARY PERMITS AND LICENSES REQUIRED TO CARRY OUT THE WORK SHOWN. OBTAIN AND PAY FOR ALL FEES.
- COMPLY WITH ALL FEDERAL, STATE AND MUNICIPAL LAWS AND CODES, ORDINANCES, RULES AND REGULATIONS OF HEALTH, PUBLIC OR OTHER AUTHORITIES CONTROLLING OR LIMITING THE METHODS, MATERIALS TO BE USED OR ACTIONS OF THOSE EMPLOYED.
- GUARANTEE H.V.A.C. SYSTEMS FOR A PERIOD OF ONE YEAR FROM OWNER'S ACCEPTANCE TO BE FREE FROM DEFECTS AND REPAIR OR REPLACE, AT NO COST TO OWNER, FAILURES OR DEFECTS.
- H.V.A.C. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL HIS DEBRIS.
- BALANCE AIR AND WATER SYSTEMS TO QUANTITIES INDICATED. CONTRACTOR TO SUBMIT TWO (2) SETS OF AIR, WATER AND UNIT BALANCING REPORT TO ARCH./ENGR./OWNER PRIOR TO FINAL ACCEPTANCE OF THE SYSTEM.
- BIDDERS FOR THIS WORK SHALL VISIT THE PREMISES AND CAREFULLY EXAMINE ALL EXISTING CONDITIONS BEFORE SUBMITTING BIDS. NOT ALL EXISTING CONDITIONS HAVE BEEN IDENTIFIED ON DRAWINGS. CONTRACTOR SHALL NOTIFY ARCH. & ENGR. OF ALL DISCREPANCIES PRIOR TO SUBMITTING BID.
- ALL BIDDERS SHALL ALSO FAMILIARIZE THEMSELVES WITH THE MEANS OF ENTRANCE AND EXIT AT THE PROPERTY AND ALL OTHER INFORMATION NECESSARY TO PROPERLY CARRY OUT THE WORK.
- THE CONTRACTOR SHALL, WITH THE APPROVAL OF THE ENGINEER AND WITHOUT ADDITIONAL COST TO THE OWNER, MAKE ALL NECESSARY CHANGES OR MODIFICATIONS TO LOCATIONS AS MAY BE NECESSARY TO SUIT REQUIREMENTS AND CONDITIONS FOR THE PROPER AND CONVENIENTLY ACCESSIBLE LOCATIONS OF ALL PARTS OF EACH SYSTEM.
- SMALL DETAILS ARE NOT USUALLY SHOWN OR SPECIFIED BUT ALL MATERIALS & COMPONENTS NECESSARY FOR THE PROPER INSTALLATION AND OPERATION OR WORK SHALL BE FURNISHED AND INSTALLED AT NO ADDITIONAL COST.
- THE CONTRACTOR SHALL NOTE THAT ALL SERVICE CONNECTIONS MAY NOT BE SHOWN IN TRUE POSITIONS. EACH BIDDER IS CAUTIONED, THEREFORE, TO VERIFY SAME WITH FIELD CONDITIONS.
- CONTRACTOR SHALL CHECK FOR INTERFERENCE AND VERIFY ALL DIMENSIONS PRIOR TO FABRICATION OR INSTALLATION OF PIPING AND DUCTWORK.
- IF AN ITEM OF EQUIPMENT OTHER THAN THE ITEM(S) SPECIFIED IS APPROVED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ADDITIONAL COST ARISING OUT OF ADDITIONAL OR CHANGED GENERAL CONSTRUCTION AND MECHANICAL WORK REQUIRED TO ACCOMMODATE THE SUBSTITUTED EQUIPMENT.
- ALL EQUIPMENT INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURERS DIRECTIONS AND RECOMMENDATIONS.
- CONTRACTOR TO SUBMIT TWO (2) SETS OF DUCT AIR LEAKAGE TESTING (DALT) REPORT FOR REVIEW.
- PROVIDE ONE SET OF SPARE FILTERS FOR ALL INSTALLED HV/HVAC UNITS.
- PROVIDE TWO YEAR MAINTENANCE SERVICE FOR ALL INSTALLED HV/HVAC/MECHANICAL SYSTEMS. THIS INCLUDES A MINIMUM OF THREE PERIODIC SERVICE VISITS TO INSPECT, TEST & CHECK ALL COMPONENTS OF HVAC/HV UNITS AND ANY ADDITIONAL VISITS REQUIRED IF ANY HVAC/HV UNIT FAILS. ALL NECESSARY BELT ALIGNMENTS, PROPER OPERATIONS OF ALL DAMPERS, ETC IS INCLUDED IN THIS SCOPE OF WORK.
- PROVIDE FIRE DAMPERS/ACCESS DOORS AT ALL DUCT PENETRATIONS THROUGH CORRIDORS, SLABS AND OTHER RATED PARTITIONS, IRRESPECTIVE OF WHETHER IT IS INDICATED ON THE DRAWINGS OR NOT.
- PROVIDE FIRE STOPPING AROUND ALL OPENINGS FOR DUCT, PIPING, CONDUIT, ETC. PENETRATIONS THROUGH CORRIDORS, SLABS AND OTHER RATED PARTITIONS.
- MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL DEMOLITION AND RESTORATION OF AREAS OF MECHANICAL REMOVALS.
- MECHANICAL CONTRACTOR IS RESPONSIBLE FOR ALL CONTAINER SERVICES AND LABOR TO KEEP THE BUILDING FREE OF DEBRIS.
- CONTRACTOR TO PROVIDE NEW WALL MOUNTED THERMOSTATS IN TAMPER PROOF ENCLOSURES FOR ALL AHU'S, RTU'S, VAV BOXES, CABINET HEATERS, UV'S FCU'S, AC UNITS, ETC. IRRESPECTIVE OF WHETHER THEY ARE INDICATED ON ALL DRAWINGS OR NOT. CONTRACTOR TO INDICATE THERMOSTAT LOCATIONS ON ALL SHOP DRAWINGS.
- CONTRACTOR TO NOTE THAT BOTH DWGS & SPECS ARE COLLECTIVELY A PART OF BID REQUIREMENTS. IN CASE OF ANY DIFFERENCES BETWEEN VARIOUS DWGS OR BETWEEN DWGS & SPECS, THE MOST STRINGENT REQUIREMENTS WILL PREVAIL.
- CONTRACTOR TO SUBMIT TWO (2) SETS OF OPERATION & MAINTENANCE MANUALS, INCLUDING A SUMMARY SHEET OF ALL EQUIPMENT MFRS, MODEL #s, SERIAL #s, SHOP DRAWING SUBMITTALS, WARRANTY INFORMATION, O&M MANUALS, PROJECT INFORMATION, CONTACT DETAILS & AS-BUILT DRAWINGS.
- CONTRACTOR TO PROVIDE TWO (2) SETS AND AN ELECTRONIC COPY OF AS-BUILT DRAWINGS OF THE ENTIRE SYSTEM.
- PROVIDE PROPER IDENTIFICATION TAGS, ARROWS, AND LABELS FOR ALL EQUIPMENT INCLUDING HVAC UNITS, VALVES, ELECTRICAL PANELS, ETC.
- CONTRACTOR TO PROVIDE A MINIMUM OF TWO (2) TRAINING SESSIONS (TWO HOURS EACH) THAT ARE TO BE VIDEOTAPE FOR THE OWNERS USE. TO OWNER'S MAINTENANCE STAFF ON PROPER OPERATION, MAINTENANCE & COMMON TROUBLE-SHOOTING GUIDELINES.

H.V.A.C. MATERIALS

EQUIPMENT:

- REFER TO SCHEDULES FOR UNIT MANUFACTURER, SIZE, AND CAPACITY DATA.

DUCTWORK:

- INDOOR SUPPLY, RETURN AND EXHAUST DUCTWORK, EXCEPT AS INDICATED BELOW, SHALL BE GALVANIZED STEEL CONSTRUCTION. WEIGHTS AND CONSTRUCTION DETAIL SHALL BE IN ACCORDANCE WITH THE LATEST ASHRAE GUIDE AND/OR SMACNA STANDARDS.
- EXTERIOR GREASE-LADEN EXHAUST DUCTWORK: SHALL BE DOUBLE-WALLED KITCHEN GREASE DUCT WITH ZERO CLEARANCE TO COMBUSTIBLES (INTEGRAL 2-HOUR FIRE-RATING); "SELKIRK" MAKE, MODEL "IPS Z3".
- INTERIOR GREASE-LADEN EXHAUST DUCTWORK: SHALL BE DOUBLE-WALLED INTERNALLY LINED RECTANGULAR DUCTWORK WITH A MINIMUM 2-HOUR FIRE-RATING.
- MAKE-UP AIR SUPPLY DUCTWORK: SHALL BE DOUBLE-WALLED INTERNALLY LINED. FINISH ON EXTERNAL SUPPLY DUCTWORK SHALL MATCH FINISH OF EXTERIOR EXHAUST DUCTWORK.
- FLEXIBLE DUCTWORK: SHALL NOT EXCEED FOUR (4) FEET IN LENGTH. FOR ANY HORIZONTAL FLEX DUCT BRANCH TO A CEILING DIFFUSER, FURNISH A 90° BRACE TO MAINTAIN A LONG RADIUS ELBOW TO THE DIFFUSER ("TITUS" MAKE, MODEL "FLEXRIGHT").
- FIRE DAMPER: "RUSKIN" MAKE, MODEL IBD23 TYPE B (BLADES OUT OF AIRSTREAM), 3 HOUR RATED (UNLESS OTHERWISE NOTED) UL-555 LABELED DAMPER WITH STANDARD FRAME OR APPROVED EQUAL. PROVIDE WITH A RETAINING ANGLE AND AN ACCESS DOOR.

PIPING:

- HOT/CHILLED WATER PIPING: SHALL BE HARD COPPER TYPE "L", WITH WROUGHT COPPER SOLDER FITTINGS (3" OR UNDER).
- GAS PIPING:
 - SHALL BE SCHEDULE 40 BLACK IRON, WITH WELDED JOINTS AND FITTINGS.
 - SHALL BE SCHEDULE #40 BLACK STEEL WITH MALLEABLE IRON SCREWED FITTINGS (PIPE SIZE 2" AND SMALLER) AND WELDED FITTINGS (PIPE SIZE 2-1/2" AND LARGER)
- CONDENSATE DRAIN PIPING: SHALL BE HARD COPPER TYPE "L" WITH WROUGHT COPPER FITTINGS. OR SCHEDULE 40 PVC WITH PVC FITTINGS (PRIMED & CEMENTED).

INSULATION:

- EXTERNAL DUCT INSULATION: 1" THICK, MIN. 1.5 LB. DENSITY FIBERGLASS DUCT INSULATION WITH REINFORCED FOIL FACED FLAME RESISTANT KRAFT VAPOR BARRIER, ADHERED TO DUCT W/ SEALED LAPS AND TAPED JOINTS.
- INTERNALLY LINED DUCT: 1" THICK, MIN. 1.0 LB. DENSITY RIGID INSULATION ADHERED TO DUCT. DUCTS WIDER THAN 12" TO HAVE WELDED PINS AND WASHERS. DUCT DIMENSIONS AS INDICATED ARE CLEAR INSIDE DUCT DIMENSIONS.

NOTES:

- ALL SUPPLY & RETURN AIR DUCTWORK SHALL BE INTERNALLY LINED FOR A MIN. OF 25' TO AND FROM ANY RTU OR AHU.
- ALL SUPPLY AIR DUCTWORK SHALL BE INTERNALLY LINED FOR A MINIMUM OF 15' DOWNSTREAM OF ALL FAN COIL UNITS, ETC.

DUCT INSULATION NOTE: PROVIDE A MINIMUM 6" OVERLAP WHERE INTERNAL INSULATION ENDS AND EXTERNAL INSULATION BEGINS.

- ALL CONDENSATE DRAIN PIPING SHALL BE INSULATED WITH 1" THICK FLEXIBLE ELASTOMERIC ("AP ARMAFLEX BLACK LAPSEAL") OR FIBERGLASS PIPE INSULATION WITH ASJ JACKET.
- FRESH AIR INTAKE AND EXPOSED DUCT: 1" THICK, MIN. 2 LB. DENSITY RIGID FIBERGLASS DUCT INSULATION WITH FOIL-FACING VAPOR BARRIER FASTENED WITH WELDED CLIPS. CEMENTED JOINTS WITH ALUMINUM TAPE.
- CHW/HW/CD PIPES SHOULD BE INSULATED WITH FIBERGLASS PIPE INSULATION WITH FACTORY APPLIED ASJ JACKET. INSTALL WITH APPROVED ADHESIVE AND STAPLES. REFER TO SPECIFICATIONS FOR INSULATION THICKNESS.

AIR DEVICES:

- SAD - TITUS MAKE, MODEL TMS
- EAR - TITUS MAKE, MODEL Z3RL

NOTES:

- ALL CEILING DIFFUSERS LOCATED IN ACOUSTIC CEILING GRID SHALL BE PROVIDED WITH FRAME TYPE FOR GRID MOUNTING. IF THE TILE IS SMALLER THAN TILE SIZE, THE DIFFUSER SHALL BE PROVIDED WITH FRAME TYPE FOR CEILING TYPE.
- ALL CEILING DIFFUSERS LOCATED IN GYPSUM BOARD AND/OR CONCEALED SPLINE CEILING SHALL BE PROVIDED WITH FRAME TYPE FOR SURFACE MOUNTING
- PROVIDE FACTORY INSTALLED 90° BLANK-OFF PLATE(S) IN ALL 2 AND 3 WAY DIFFUSERS.
- COLOR OF AIR OUTLETS/INLETS SHALL MATCH THE CEILING COLOR.
- ALL AIR OUTLETS/INLETS TOILETS, CORRIDORS, AND KITCHEN SHALL BE ALUMINUM CONSTRUCTION

ACCESS DOORS

- FURNISH AND INSTALL ACCESS DOORS AT ALL LOCATIONS WHERE VALVES, DAMPERS, CONTROLS, VENTS, DRAINS, ETC. ARE TO BE INSTALLED ABOVE OR BEHIND ANY INACCESSIBLE SURFACE (GYPSUM BOARD, CMU, ETC.), IRRESPECTIVE OF WHETHER THEY ARE INDICATED ON ALL DRAWINGS OR NOT. ACCESS DOORS SHALL BE A SUITABLE SIZE TO MAINTAIN, OPERATE, REPAIR, AND REPLACE ALL EQUIPMENT. ACCESS DOORS SHALL BE FACTORY PRIMED AND PAINTED TO MATCH THE SURFACE IN WHICH THEY ARE INSTALLED.

PIPING:

INSTALL THE FOLLOWING PIPE ATTACHMENTS:

ADJUSTABLE STEEL CLEVIS HANGERS FOR INDIVIDUAL HORIZONTAL PIPING LESS THAN 20 FEET LONG.

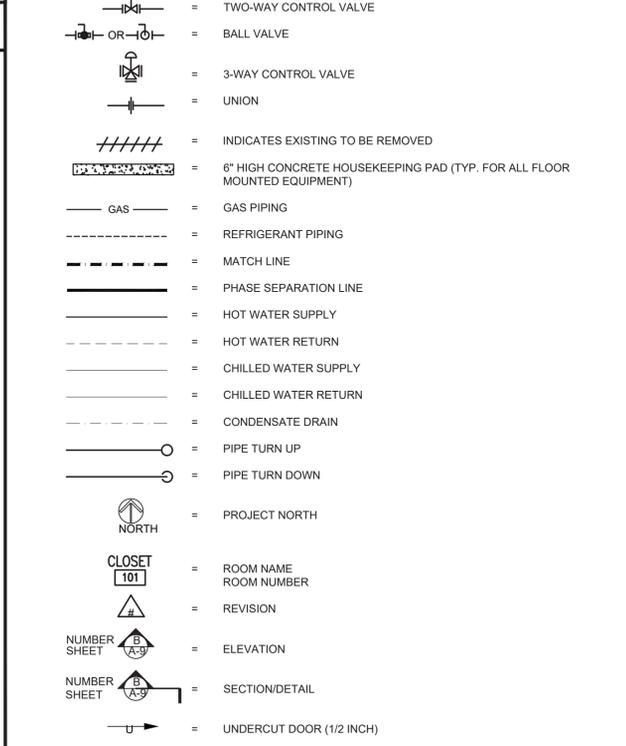
ADJUSTABLE ROLLER HANGERS AND SPRING HANGERS FOR INDIVIDUAL HORIZONTAL PIPING 20 FEET OR LONGER.

PIPE ROLLER: MSS SP-58, TYPE 44 FOR MULTIPLE HORIZONTAL PIPING 20 FEET OR LONGER, SUPPORTED ON A TRAPEZE.

SPRING HANGERS TO SUPPORT VERTICAL RUNS.

GENERAL CONSTRUCTION NOTES

- MECHANICAL CONTRACTOR IS RESPONSIBLE FOR THE CUTTING OF ALL WALLS, FLOORS, CEILING ETC. FOR ALL PIPE & DUCT PENETRATIONS. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR CUTTING HOLES IN ROOF FOR EQUIPMENT AND DUCTWORK AND PROVIDING ROOF/FLOOR/WALL STRUCTURAL SUPPORT. GENERAL CONTRACTOR SHALL PROVIDE BLOCKING, ROOFING, DUNNAGE.
- MECHANICAL CONTRACTOR IS REQUIRED TO PATCH (TO MATCH EXISTING), IMMEDIATELY AFTER REMOVAL, ALL WALL, FLOOR & CLG. OPENINGS WHERE EXISTING PIPE, PNEUMATIC LINES, DUCT, UNIT VENTILATORS, BASEBOARDS, ETC. ARE BEING REMOVED. SEAL OPENING WITH 3 HOUR FIRE BARRIER CAULK. SEE GENERAL LOCATIONS ON MECHANICAL DEMOLITION PLAN.
- MECHANICAL CONTRACTOR TO REFER TO MECHANICAL DRAWINGS FOR PAINTING OF DUCTWORK, FURNISHING AND INSTALLING ACCESS PANELS, CUTOUT LOCATIONS, ETC.
- ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING & RELOCATING EXISTING ELECTRICAL, FIRE ALARM & COMMUNICATION DEVICES TO ACCOMMODATE THE INSTALLATION OF NEW UNITS, PIPING & DUCTWORK. CHECK IN FIELD.
- GENERAL CONTRACTOR SHALL REMOVE EXISTING CEILING TILES AND CEILING GRID TO ACCOMMODATE THE INSTALLATION OF NEW UNITS, PIPING & DUCTWORK. RE-INSTALL ALL CEILING TILES BACK TO MATCH EXISTING. REMOVE & REPLACE ALL DAMAGED TILES & CEILING GRID. CHECK IN FIELD.
- GENERAL CONTRACTOR SHALL PROVIDE ROOFING PATCH WORK AND TIE-IN FOR ALL NEW PLUMBING, MECHANICAL AND ELECTRICAL EQUIPMENT AND CONDUIT THAT PENETRATES THE EXISTING ROOF.
- MECHANICAL CONTRACTOR TO PATCH FLOORS & WALLS WHERE EXISTING THERMOSTAT & PNEUMATIC TUBING IS BEING REMOVED W/ NON-SHRINK GROUT. PAINT TO MATCH EXISTING.
- MECHANICAL CONTRACTOR IS RESPONSIBLE TO DEMOLISH EXISTING HOUSEKEEPING CONCRETE PADS FOR EXISTING MECHANICAL EQUIPMENT WHICH ARE TO BE DEMOLISHED AND NOT TO BE USED.
- MECHANICAL CONTRACTOR IS RESPONSIBLE TO CORE DRILL ALL WALLS, FLOORS, CEILING ETC. FOR ALL PIPE CONDUIT, ETC. PENETRATIONS. SEAL OPENING WITH 3HRS FIRE BARRIER CAULK.
- CONTRACTORS SHALL FAMILIARIZE THEMSELVES WITH THE EXTENT AND SCOPE OF THE WORK PRIOR TO SUBMITTING BIDS OR COMMENCING WORK.
- CONTRACTORS SHALL REVIEW DRAWINGS AND FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO COMMENCING WORK. THE CONTRACTORS SHALL REPORT ANY DISCREPANCIES, AND ADDRESS ALL QUESTIONS TO ARCHITECT/ENGINEER PRIOR TO COMMENCING WORK.
- THE CONTRACTORS SHALL SECURE AND PAY FOR ALL REQUIRED PERMITS, FEES AND INSPECTIONS PRIOR TO COMMENCING WORK. UPON COMPLETION OF WORK THE CONTRACTOR SHALL SECURE CERTIFICATE OF OCCUPANCY.
- CONTRACTORS SHALL BE RESPONSIBLE TO DISPOSE OF ALL DEMOLISHED MATERIAL OF SITE IN AN APPROVED MANNER.
- DOWN-TIME FOR THE TIE-IN OR SWITCHOVER SHALL BE KEPT TO A MINIMUM. COORDINATE SCHEDULE WITH THE OWNER.



MICHAEL J. MCGOVERN, P.A.
 REGISTERED ARCHITECT
 License No. 022297-1

Revisions:

08/02/23
 ISSUE FOR RE-BID

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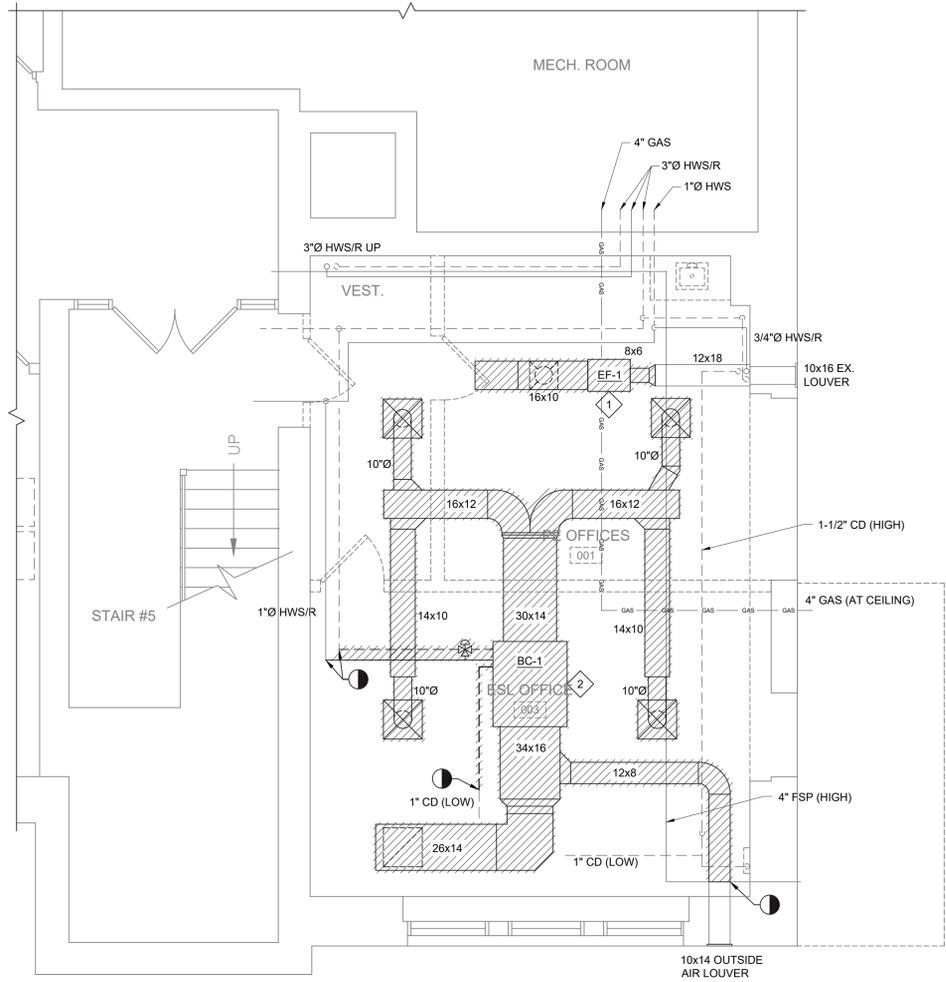
LAN ASSOCIATES
 Engineering, Planning, Architecture, Surveying LLP
 252 Main Street, Goshen, New York 10924 | t. 845-615-0350 | f. 845-615-0351

MECH NOTES, SYMBOLS & ABBREV.
 NEW KITCHEN DESIGN
 MAMARONECK AVENUE SCHOOL
 850 MAMARONECK AVENUE
 MAMARONECK, NEW YORK 10543

NYSED PROJECT # 66-07-01-03-0-004-033

Job No. 4.1092.85
 File No. 109285M001

M0.01



Demolition Key Notes

1. REMOVE SUSPENDED EXHAUST FAN INCLUDING CONTROLS, HANGERS, ELECTRICAL CONNECTIONS PER LATEST NEC, AND ALL OTHER APPURTENANCES.

2. REMOVE SUSPENDED BLOWER COIL INCLUDING DUCTWORK, DIFFUSERS, HANGERS, HYDRONIC COMPONENTS INCLUDING CONTROL VALVE, ELECTRICAL CONNECTIONS PER LATEST NEC, AND ALL OTHER APPURTENANCES.

SYMBOL INDICATES DEMOLITION KEY NOTE

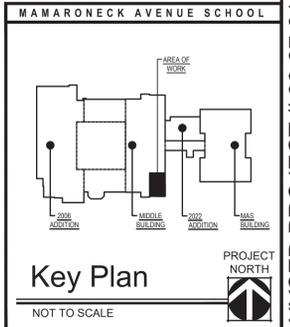
Existing Mechanical Floor Plan w/ Demolition
 PARTIAL LOWER LEVEL FLOOR PLAN
 1/4" = 1'-0"
 NORTH

Date: 12/20/22
 Checked: MAM
 Drawn: JPD
MICHAEL J. MCGOVERN, P.E.
 LICENSE NO. 022257-1
 REGISTERED ARCHITECT

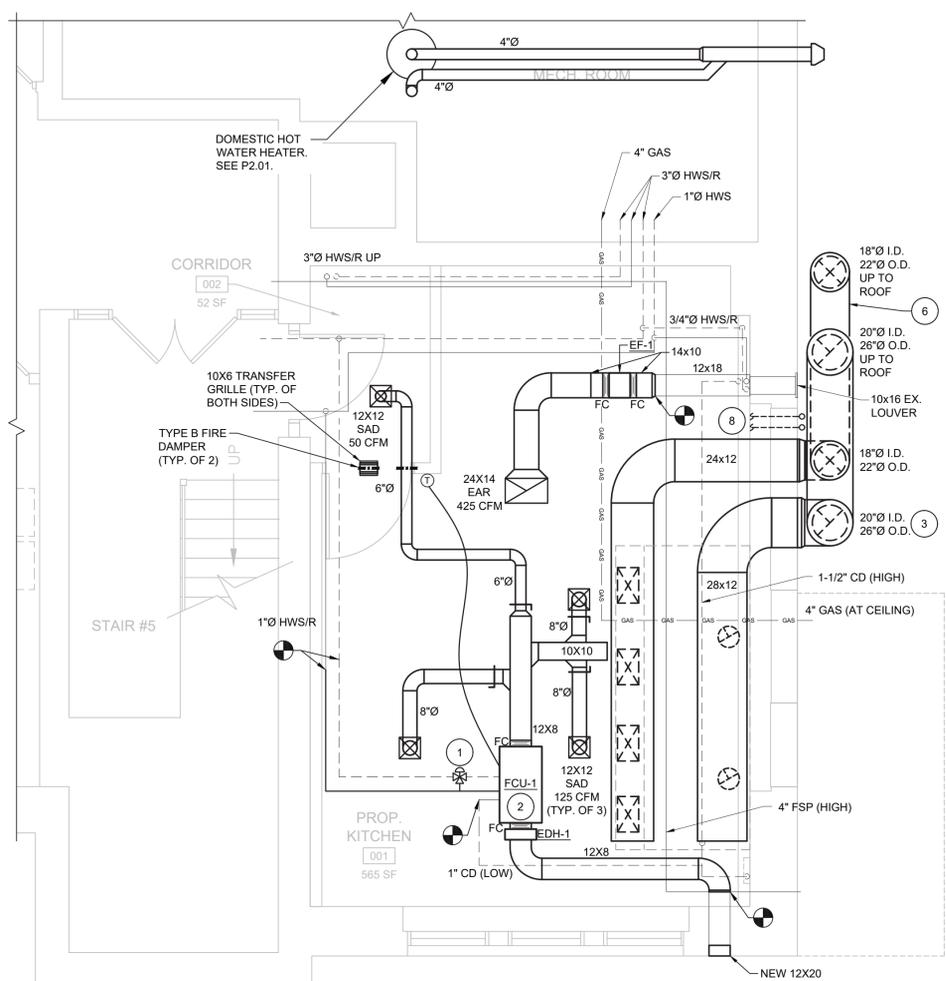
Revisions:
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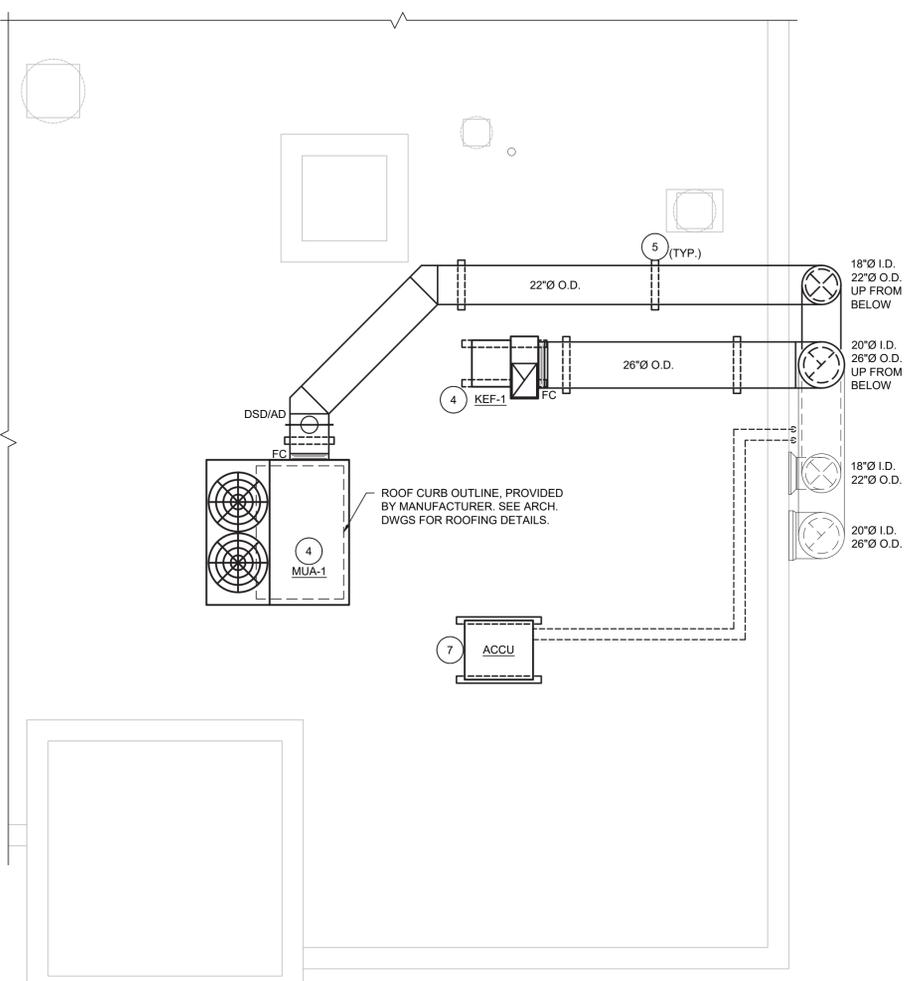
Engineering, Planning, Architecture, Surveying LLP
LAN ASSOCIATES
 252 Main Street, Goshen, New York 10924 | t. 845-615-0350 | f. 845-615-0351



NYSED PROJECT # 66-07-01-03-0-004-033
DEMOLITION MECHANICAL FLOOR PLANS
 NEW KITCHEN DESIGN
 MAMARONECK AVENUE SCHOOL
 850 MAMARONECK AVENUE
 MAMARONECK, NEW YORK 10543
 Job No. 4.1092.85
 File No. 109285M101
M1.01



1
M2.01
1/4" = 1'-0"
Proposed Kitchen Mechanical Floor Plan
PARTIAL LOWER LEVEL FLOOR PLAN



2
M2.01
1/4" = 1'-0"
Proposed Mechanical Roof Plan
PARTIAL LOWER LEVEL FLOOR PLAN

- Construction Key Notes**
- 1. NEW 3-WAY DDC CONTROL VALVE SHALL BE TIED INTO THE EXISTING BMS.
 - 2. PROVIDE NEW FCU-1 WITH SECONDARY DRAIN PAN AND CONNECT DRAIN PAN OUTLET TO EXISTING CONDENSATE LINE. PROVIDE HANGERS & VIBRATION ISOLATORS FOR FCU-1 AND EDH-1 TO BE SUPPORTED BY THE BUILDING STRUCTURE.
 - 3. PROVIDE DUCT MANUFACTURER'S CLEAN OUT AT BOTTOM OF DUCT.
 - 4. REFER TO DRAWING M6.02 AND M6.03 FOR UNIT INFORMATION.
 - 5. DUCT SUPPORTS, MAXIMUM SPACING SHALL BE 10'.
 - 6. DUCTWORK SHALL BE ROUTED BETWEEN WINDOWS. SEE A3.01 FOR EXTERIOR ELEVATION. CUSTOM COLOR DUCTWORK TO BE SELECTED BY ARCH/ENGINEER FROM MANUFACTURER'S FULL RANGE OF COLOR DURING SUBMITTAL PHASE OF CONSTRUCTION.
 - 7. WALK-IN FREEZER REMOTE COMPRESSOR/CONDENSER. SEE FOOD SERVICE DWG FS-7 FOR UNIT SPECIFICATIONS. REFRIGERANT PIPING TO BE ROUTED ON THE ROOF AND DOWN EXTERIOR WALL. PROVIDE PIPE COVER ON EXTERIOR WALL AND PAINT PER THE OWNER'S COLOR SELECTION.
 - 8. WALK-IN FREEZER REFRIGERANT PIPING TO FREEZER EVAPORATOR.

- General Notes**
- 1. MECHANICAL CONTRACTOR SHALL REVIEW THE FOOD SERVICE DRAWINGS ("FS.X") AND IS RESPONSIBLE FOR ALL WORK ITEMS CALLED AS BEING BY THE MECHANICAL CONTRACTOR OR "MC" EVEN IF NOT INDICATED ON THE M2.XX DWGS.
 - 2. REFER TO DRAWINGS M6.02 AND M6.03 FOR KEF-1 AND MUA-1 SCHEDULES.
 - 3. REFER TO SPECIFICATION 230993 FOR EF-1 SEQUENCE OF OPERATIONS.

VENTILATION TABLE

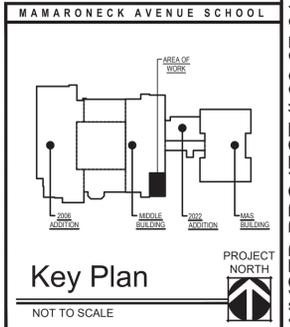
Unit Served	Room No.	Room Name	Floor Area (Sq. Ft.)	Occupancy Classification	Required O.A. per Sq. Ft.	Required O.A. For Space	No. of People	Required O.A. For Person	Required OA For Occupants	Total Min. O.A. Required (CFM)	Zone Air Distribution Effectiveness	Zone Min. O.A. Required (CFM)	Design O.A. (CFM)	E.A. (CFM)
MAU-1	1	KITCHEN	565	KITCHEN	0.12	68	12	8	90	158	0.8	197	197	396
	2	CORRIDOR	52	CORRIDOR	0.06	3	0	0	0	3	0.8	4	4	-

MAKE-UP AIR FAN COIL UNIT SCHEDULE (DAIKIN AS STANDARD)

TAG	AREA SERVED	CFM	MIN O.A. (CFM)	ESP (In. H ₂ O)	ELECTRIC PRE-HEAT DUCT HEATER					CHILLED WATER COOLING						HOT WATER HEATING				ELECTRICAL DATA		DIMENSIONS (L x W x H) (In.)	APPROX WEIGHT (Lbs)	MODEL	MANUFACTURER	NOTES									
					TAG	CAPACITY (KW)	V - Ph - Hz	MCA/MOP	CONTROLS	MANUF. & MODEL	TMBH	SMBH	EADB (°F)	EAWB (°F)	LADB (°F)	LAWB (°F)	EWIT (°F)	LWIT (°F)	GPM	WPD (F)	MBH						EAT (°F)	LAT (°F)	EWIT (°F)	LWIT (°F)	GPM	WPD (F)	V - Ph - Hz	MCA	FAN HP/BHP
FCU-1	KITCHEN #001	425	425	0.50	EDH-1	5	208 - 1 - 60	30/35	SCR W/ THERMOSTAT & SENSOR	RENEWAIRE EK-1818055SC CHR-21-1SV-N	14.3	11.6	95	75	71.4	66.6	45	55	2.9	3.28	55.1	0	112	180	160	5.9	10.14	208 - 1 - 60	3.6	0.33 / 0.09	43 x 24 x 18	193	BCHD0061	DAIKIN	SEE NOTE(S) BELOW

GENERAL VENTILATION EXHAUST FAN SCHEDULE (GREENHECK AS STANDARD)

TAG	LOCATION	AREA SERVED	CFM	STATIC PRESSURE LOSS (IN)	ELECTRICAL DATA				DIMENSIONS (LxWxH) (In.)	APPROX WEIGHT (Lbs)	MODEL	MANUFACTURER	NOTES
					FLA	BHP	RPM	V / Ph / Hz					
EF-1	KITCHEN #001	KITCHEN #001	425	0.25	0.9	0.06	1,093	208 / 1 / 60	12 X 14 X 11	24	CSP-A390-VG	GREENHECK	SEE NOTE(S) BELOW



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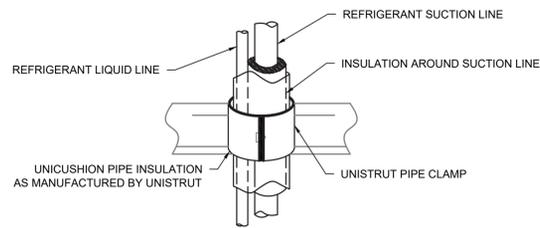
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PROPOSED KITCHEN & ROOF PLAN
NEW KITCHEN DESIGN
MAMARONECK AVENUE SCHOOL
850 MAMARONECK AVENUE
MAMARONECK, NEW YORK 10543

Job No. 4.1092.85
File No. 109285M201

M2.01

NYSED PROJECT # 66-07-01-03-0-004-033

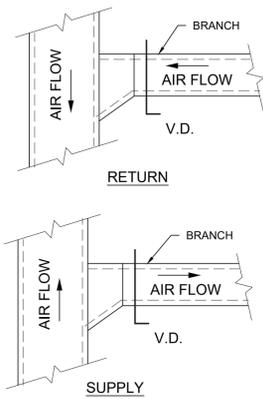


NOTES:

1. LIQUID AND SUCTION LINES MAY BE ROUTED TOGETHER FOR CONVENIENCE, BUT MUST BE COMPLETELY INSULATED FROM EACH OTHER. DO NOT SOLDER LIQUID AND SUCTION LINES TOGETHER. DO NOT ALLOW METAL TO METAL CONTACT. PROVIDE WITH PIPE COVERS.
2. LINES SHOULD BE INSTALLED WITH AS FEW BENDS AS POSSIBLE, ALLOWING SERVICE ACCESS TO THE INDOOR COIL.
3. SLOPE HORIZONTAL SUCTION LINES 1 INCH EVERY 20 FEET TOWARD THE OUTDOOR UNIT.
4. USE LONG RADIUS ELBOWS WHEREVER POSSIBLE, EXCEPT IN OIL RETURN TRAPS, WHERE SHORT RADIUS ELBOWS SHALL BE USED.

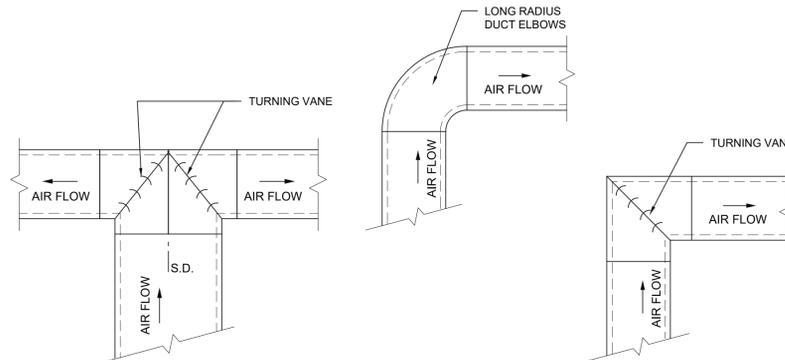
1 Refrigerant Pipe Support Detail

M6.01 N.T.S.



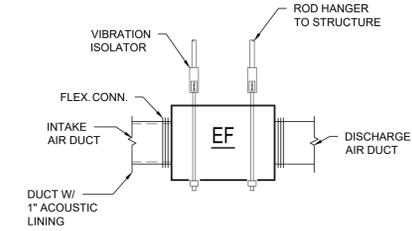
2 Duct / Diffuser Take-Off Detail

M6.01 N.T.S.



3 Duct Turn Detail

M6.01 N.T.S.

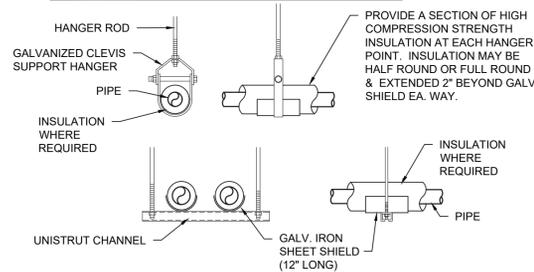


4 Inline Exhaust Fan Detail

M6.01 N.T.S.

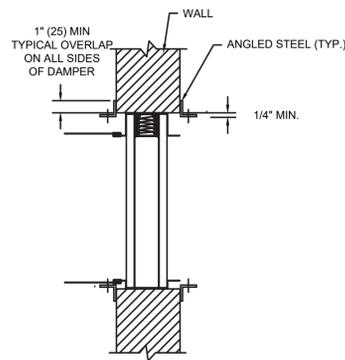
NOTES:

1. ATTACH SUPPORTS FOR ALL PIPING SUSPENDED FROM THE STEEL STRUCTURE TO THE TOP CORD OF JOISTS OR BEAMS.
2. PROVIDE COPPER OR PLASTIC COATED HANGERS FOR NON-INSULATED COPPER PIPE.



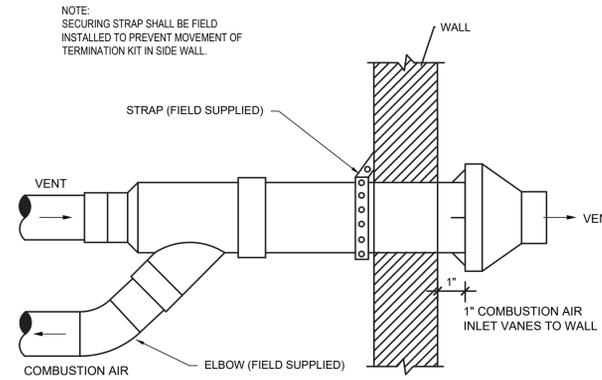
5 Pipe Support Details

M6.01 N.T.S.



6 Typical Type "B" Fire Damper Detail

M6.01 N.T.S.



7 Side Wall Termination for Concentric Vent

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NYS ED PROJECT # 66-07-01-03-0-004-033

MECHANICAL DETAILS
 NEW KITCHEN DESIGN
 MAMARONECK AVENUE SCHOOL
 850 MAMARONECK AVENUE
 MAMARONECK, NEW YORK 10543

Job No. 4.1092.85
 File No. 109285M601

M6.01

EXHAUST FAN INFORMATION - JOB#5699819

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES	NOTES
1	KEF-1	1	USB18DD-RM	CAPTIVEAIRE	2600	1.500	1222	ODP,PREMIUM	1.500	1.0560	3	208	6.6	1333 FPM	416	17.8	15

DOAS/RTU FAN SCHEDULE - JOB#5699819

FAN UNIT NO	TAG	QTY	DOAS/RTU MODEL #	MANUFACTURER	BLOWER	RETURN AIR CFM	MAX OUTSIDE AIR CFM	TOTAL CFM	WEIGHT (LBS)	ESP	HP	PHASE	VOLT	MCA	MOCP	OUTSIDE AIR		LEAVING AIR		CAPACITY		IEER	ISMRE	REHEAT INFORMATION		MOISTURE REMOVAL RATE	GAS HEAT INFORMATION			NOTES				
																DB	WB	DB	WB	DP	TOTAL			SENS.	DB		WB	DESIRED	MAX		GAS TYPE	INPUT BTUs	OUTPUT BTUs	TEMP RISE
2	MUA-1	1	CASRTU2-1.200-15-8T-DOAS	CAPTIVEAIRE	15P-2	0	2175	2175	1808	0.500	2.00	3	208	37.1A	40A	81.0°F	76.1°F	63.7°F	63.3°F	63.1°F	102.0 MBH	40.7 MBH	20.2	9.8	90.0°F	71.5°F	63.3 MBH	0.2 MBH	55.4 LBS/HR	NATURAL	186433	151011	58°F	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15

- NOTES:
- INVERTER SCROLL COMPRESSOR WITH INTEGRATED OIL SENSOR. DIGITAL OR STAGED SCROLL NOT AN APPROVED EQUAL
 - DIRECT DRIVE PLENUM BLOWER. BELT DRIVEN BLOWERS ARE NOT ACCEPTABLE
 - INTEGRATED MONITORING VIA CELLULAR CONNECTION BY MANUFACTURER
 - REFRIGERATION PRESSURE MONITORING ON HIGH AND LOW PRESSURE SIDE OF SYSTEM INCLUDED THROUGH DIGITAL INTERFACE
 - EC MOTOR CONDENSING FANS
 - ELECTRONIC EXPANSION VALVE. TXV NOT ACCEPTABLE
 - SUCTION LINE ACCUMULATOR
 - FACTORY COMMISSIONING WITH 5 YEAR PARTS WARRANTY, 25 YEAR WARRANTY ON STAINLESS STEEL HEAT EXCHANGER
 - AVERAGING INTAKE, EVAP AND DISCHARGE TEMPERATURE SENSORS (DISCHARGE SENSOR TO BE FACTORY MOUNTED WITHIN UNIT)
 - 2" EXTERIOR DUAL-WALL CONSTRUCTION W/ R-13 INSULATION-MINIMUM 20GA EXTERIOR W/ 14GA BASE
 - 81% EFFICIENT FURNACE, WITH MODULATING INDUCER TO MAINTAIN CONSTANT COMBUSTION EFFICIENCY ACROSS FIRING RANGE. 6:1 TURNDOWN WITH NG AND 5:1 TURNDOWN WITH LP
 - SUPPLY CFM MONITORING INTEGRAL TO UNIT WITH CFM MEASUREMENT INCLUDED THROUGH DIGITAL INTERFACE
 - FULLY MODULATING HOT GAS REHEAT
 - SIDE DISCHARGE/NO RETURN
 - UNIT TO BE INTERLOCKED WITH EXISTING BMS.

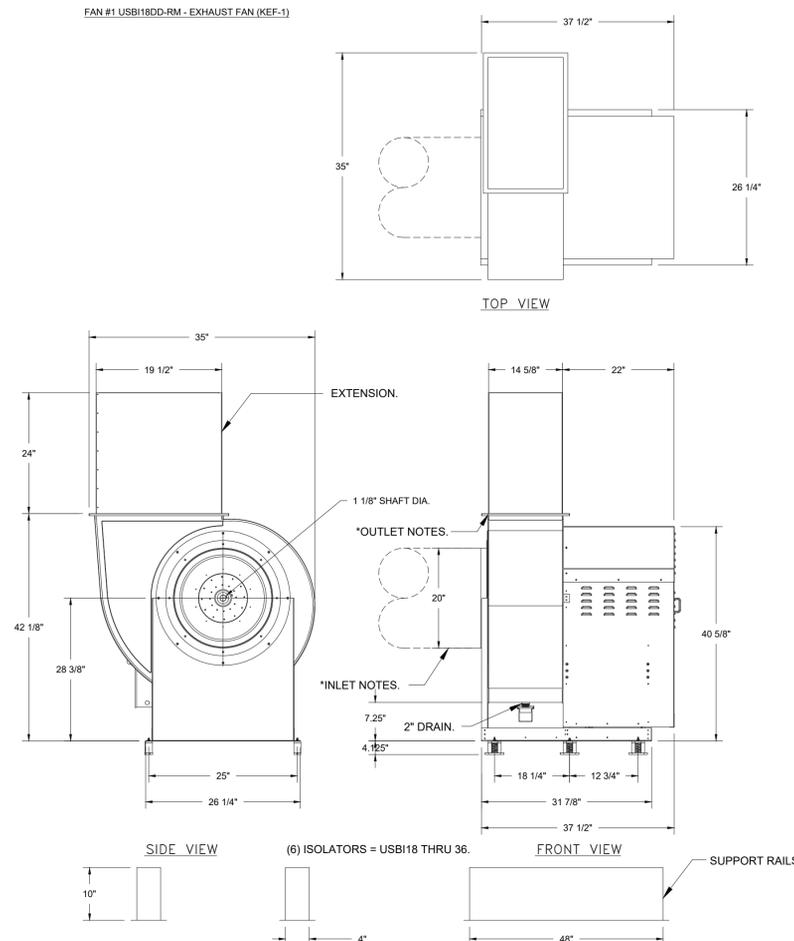
FAN OPTIONS

FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KEF-1	1	B18 - INLET SERVICE DUCT CONNECTION. USED TO CONNECT TO STANDARD 20" GREASE DUCT OR FIELD WELDED DUCT. INCLUDES (2) 7" RISERS BOLTED TO STANDARD INLET RISER
		1	UTILITY SET GREASE CUP
		1	B18 - 24" DISCHARGE EXTENSION
		1	BI - DISCHARGE ORIENTATION VERTICAL UPPER LEFT - CW INLET SIDE
		1	B18 - INLET CONNECTION STANDARD 20" FLANGED GREASE DUCT
		1	UTILITY SET - SPRING VIBRATION ISOLATORS - B18 / EQUIVALENT SIZED UTILITY SET - INDOOR/OUTDOOR USE
		1	2 YEAR PARTS WARRANTY
		1	INLET PRESSURE GAUGE, 0-35"
		1	MANIFOLD PRESSURE GAUGE, 0 TO 10" WC, 1 FURNACE
		1	RTU TOTAL CFM MONITORING
2	MUA-1	1	SINGLE POINT ELECTRICAL CONNECTION FOR RTU. 750VA TRANSFORMER USED. IF A NON-DCV PREWIRE CONTROLS THIS UNIT, THE #28, #47, "MA", OR "E2" PREWIRE OPTION MUST BE SELECTED. DOES NOT PROVIDE SUPPLY STARTER IN PREWIRE
		1	CASLINK BUILDING MONITORING SYSTEM - INTERNET OR CELLULAR CONNECTION REQUIRED
		1	2" MERV 13 FILTERS FOR RTU2 (QTY. 4)
		1	2" MERV 8 FILTERS FOR RTU2 (QTY. 4)
		1	OVERHEAT STAT
		1	VFD FACTORY MOUNTED AND WIRED IN RTU COMMERCIAL CONTROL VESTIBULE
		1	RTU FIXED 100% OA INTAKE CONTROL
		1	RTU2 NO RETURN - 100% OA
		1	RTU2 SIDE DISCHARGE
		1	RTU2 CURB DUCT HANGER
		1	COMMERCIAL SMOKE DETECTOR/ALARM INTERLOCK - ALARM SUPPLIED BY OTHERS
		1	8 TON MODULATING COOLING OPTION, 208/230V. R410A REFRIGERANT, VARIABLE SPEED COMPRESSOR, ECM CONDENSING FANS
		1	IBT/ELEC ONLY REHEAT
		1	AUXILIARY REHEAT
		1	VAV PACKAGE W/ MANUAL/DDC CONTROL (571 VFD INCLUDED)
1	5 YEAR ENTIRE UNIT PARTS WARRANTY, 10 YEAR ENTIRE UNIT PARTS WARRANTY WITH REMOTE MONITORING AND CAPTIVEAIRE SERVICE CONTRACT, 25 YEAR STAINLESS STEEL FURNACE PARTS WARRANTY (SEE ADDITIONAL DETAILS)		

CURB ASSEMBLIES

NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	#1	KEF-1	25 LBS	RAIL	4.000"W X 48.000"L X 10.000"H ALONG WIDTH, RIGHT COMES AS A SET OF 2.
2	#2	MUA-1	111 LBS	CURB	49.500"W X 75.000"L X 20.000"H ALONG WIDTH, RIGHT INSULATED.

FAN #1 USB18DD-RM - EXHAUST FAN (KEF-1)

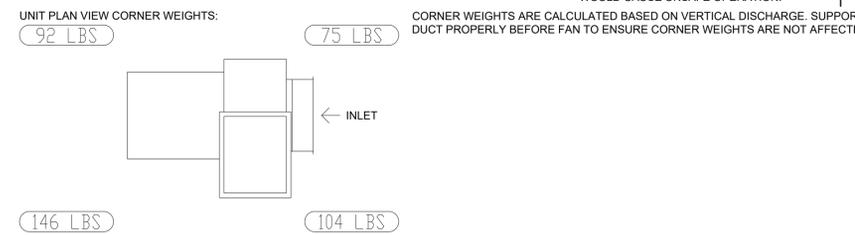


- FEATURES:
- ROOF MOUNTED FANS.
 - UL705.
 - UL762 AND ULC-S645 (RESTAURANT MODEL).
 - HIGH HEAT OPERATION DIRECT DRIVE 350°F (176°C).
 - HEAT SLINGER.
 - NEMA 3R SAFETY DISCONNECT SWITCH.
 - GREASE CLASSIFICATION TESTING.
 - 2" DRAIN.
 - MOTOR WEATHER COVER.
 - FULLY SEALED SCROLL HOUSING.
 - SCROLL ACCESS DOOR.
 - FLANGE 1 1/4".

- UNINCLUDED OPTIONS:
- B18 - INLET SERVICE DUCT CONNECTION. USED TO CONNECT TO STANDARD 20" GREASE DUCT OR FIELD WELDED DUCT. INCLUDES (2) 7" RISERS BOLTED TO STANDARD INLET RISER.
 - UTILITY SET GREASE CUP
 - B18 - 24" DISCHARGE EXTENSION
 - BI - DISCHARGE ORIENTATION VERTICAL UPPER LEFT - CW INLET SIDE
 - B18 - INLET CONNECTION STANDARD 20" FLANGED GREASE DUCT
 - UTILITY SET - SPRING VIBRATION ISOLATORS - B18 / EQUIVALENT SIZED UTILITY SET - INDOOR/OUTDOOR USE.
 - 2 YEAR PARTS WARRANTY.

* INLET/OUTLET NOTES:
LENGTH OF THE STRAIGHT DUCT ON THE INLET AND OUTLET TO BE 3 TIMES THE EQUIVALENT DUCT DIAMETER BEFORE CONNECTING TO ANY FITTINGS SUCH AS ELBOWS TO AVOID SYSTEM EFFECT.

NORMAL TEMPERATURE TEST DIRECT DRIVE EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 350°F (176°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.



MICHAEL J. MCGOVERN, P.E.
REGISTERED ARCHITECT
License No. 022217-1

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NYSED PROJECT # 66-07-01-03-0-004-033

CAPTIVE AIRE MECHANICAL DETAILS
NEW KITCHEN DESIGN
MAMARONECK AVENUE SCHOOL
850 MAMARONECK AVENUE
MAMARONECK, NEW YORK 10543

Job No. 4.1092.85
File No. 109285M602

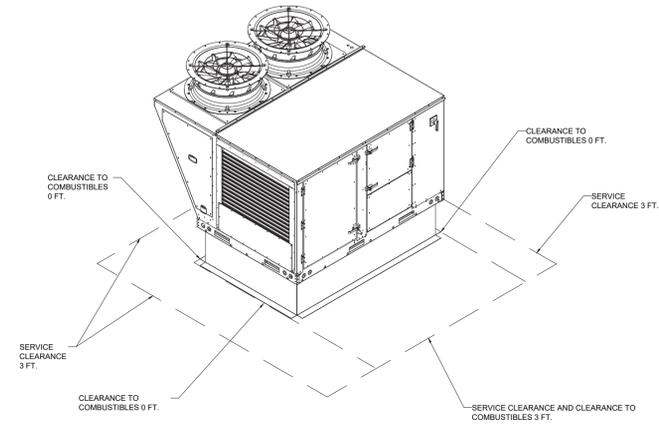
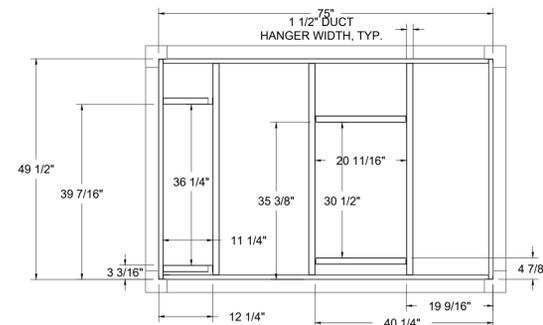
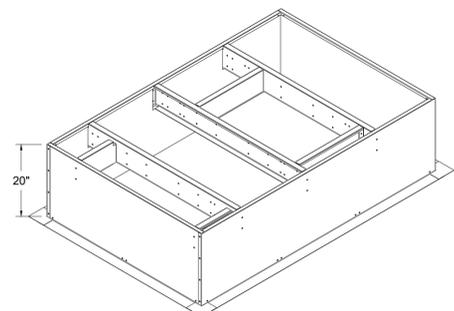
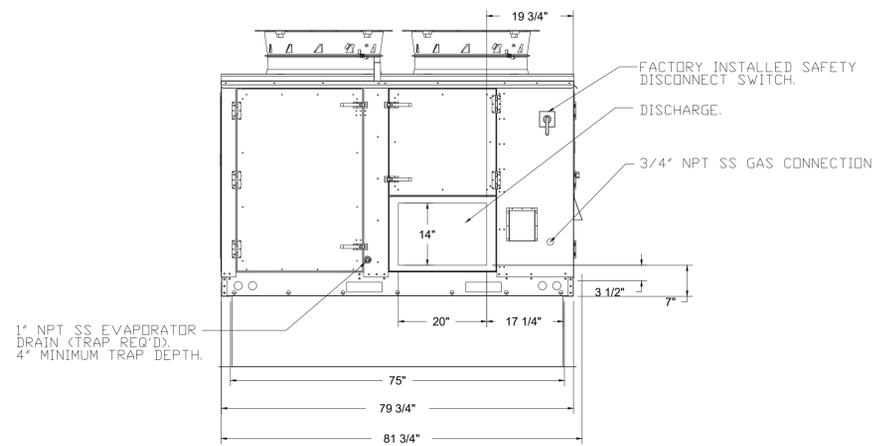
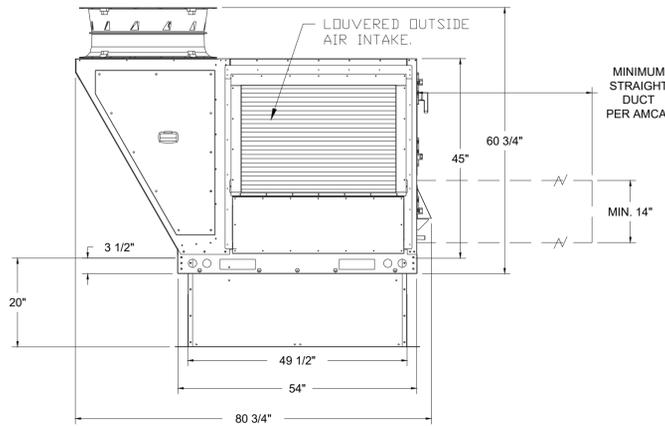
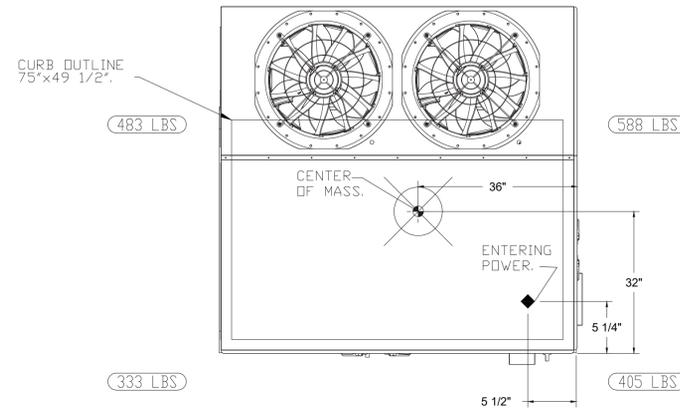
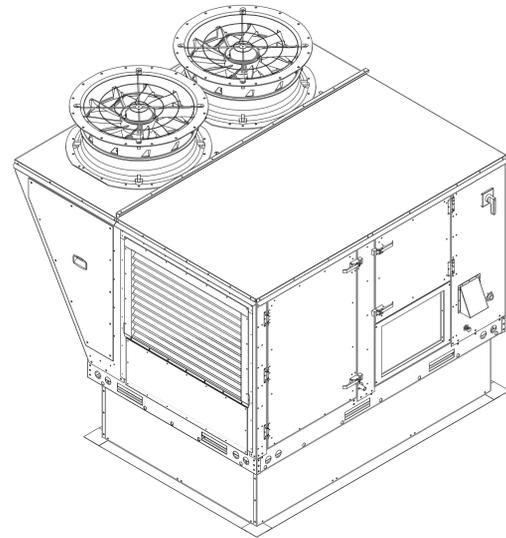
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FAN #2 CASRTU2-I.200-15-8T-DOAS - HEATER (MUA-1)

NOTES:

- DO NOT OBSTRUCT OUTSIDE AIR INLET, OUTSIDE AIR COIL OR OUTSIDE AIR FAN.
-  DENOTES CORNER WEIGHT.
- ROOF OPENING MUST BE 2" SMALLER THAN CURB DIMENSIONS IN BOTH DIRECTIONS.

*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT. SUGGESTED STRAIGHT DUCT SIZE IS 20" x 14".



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